4F Crops

Kick-off meeting

01/07/2008

Brussels

Dr Georgios Kitsios

Γεωπονικό Πανεπιστήμιο Αθηνών
Agricultural University of Athens

Who we are

Participant AUA.bio

Γεωπονικό Πανεπιστήμιο Αθηνών
Agricultural University of Athens

- A state-supervised higher education and research organization
- Multi-discipline research (Plant science, Food science, Animal science, Agricultural economics, Rural development)

Who we are

Department of Agricultural Biotechnology
Molecular Biology Laboratory
Iera Odos 75, 11855, Athens, Greece
Tel: +30-210-5294348
Fax: +30-210-5294321
email:bmbi2mid@aua.gr

Plant Molecular biology group

Research experience

- Plant molecular biology
- Genetics
- Developmental genetics
- Cultivar identification
- Discrimination-genetic mapping & relationships

Research interests

i. Molecular mechanisms underlying cell differentiation

ii. Plant stress mechanisms

iii. Genetic mapping & cultivar discrimination of olive

iv. Biological aspects of oil biosynthesis in olives

Γεωπονικό Πανεπιστήμιο Αθηνών
Agricultural University of Athens

Work Package 2: Cropping possibilities

Objectives: To assess the cropping possibilities of the non-food crops in the existent agricultural systems. Parameters that will be investigated will be the choice of the crops, the rotation possibilities, the yields per unit of land area, the desirable raw materials characteristics as well as **the role that the biotechnology will play on the further yielding improvement.**

Task 2.5 (AUA.bio) : Biotechnological improvement

Description:

- An inventory of the current state of art of the generic tools currently available for the non-food crops of interest.
- This knowledge-based approach will provide potential improvements to selected non-food crops.
- At the same time, lack of knowledge can be identified and future research questions to be defined.

People involved: Dr. Dimitra Milioni, Dr Stamatis Rigas, Dr. Georgios Kitsios

Γεωπονικό Πανεπιστήμιο Αθηνών
Agricultural University of Athens

Crop improvement and Biotechnology

Reasons:

- Plants are a great part of our economic prosperity (food, feed, fiber, biofuels)
- Europe is facing the challenge to provide sustainable, safe, high quality and health promoting products

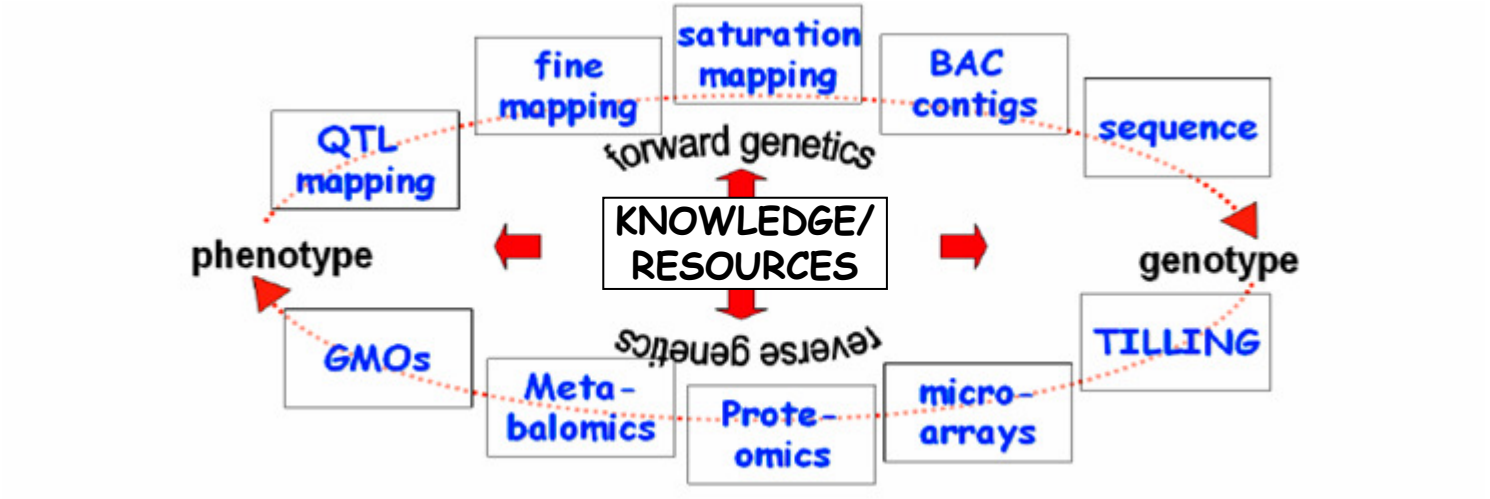
Obstacles:

- Germ plasm in short supply
- Slow traditional breading, selection and hybridization techniques
- Breeding experience is restricted to major crops

New biotechnological routes for crop improvement through the production of both non-genetically modified (non-GM) and GM plants.

Task 2.5 (AUA.bio) : Biotechnological improvement

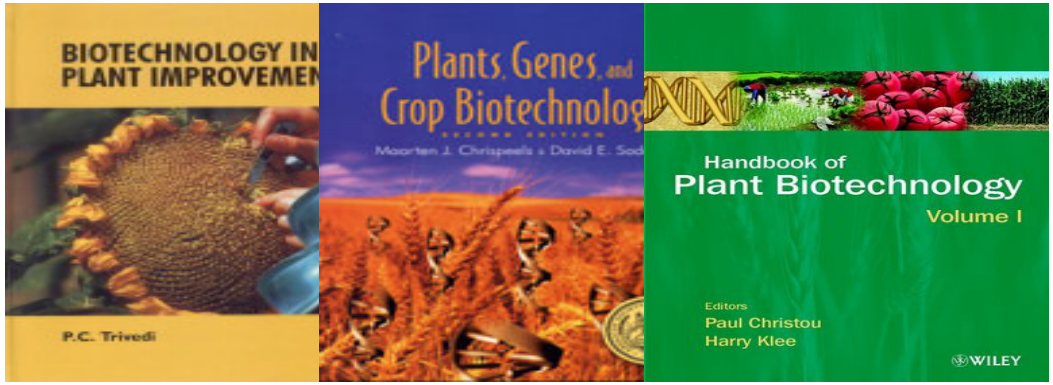
Build upon the present knowledge base



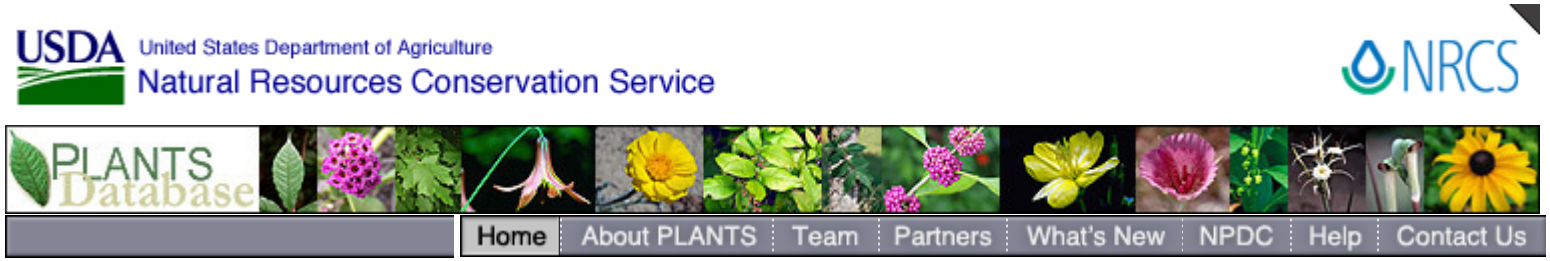
- Exploit the knowledge and resources produced previously
- Understand the genetics of selected agronomical traits
- Identify possible biotechnological applications for non-food crop improvement

Resources: Literature

Scientific review papers, articles and books



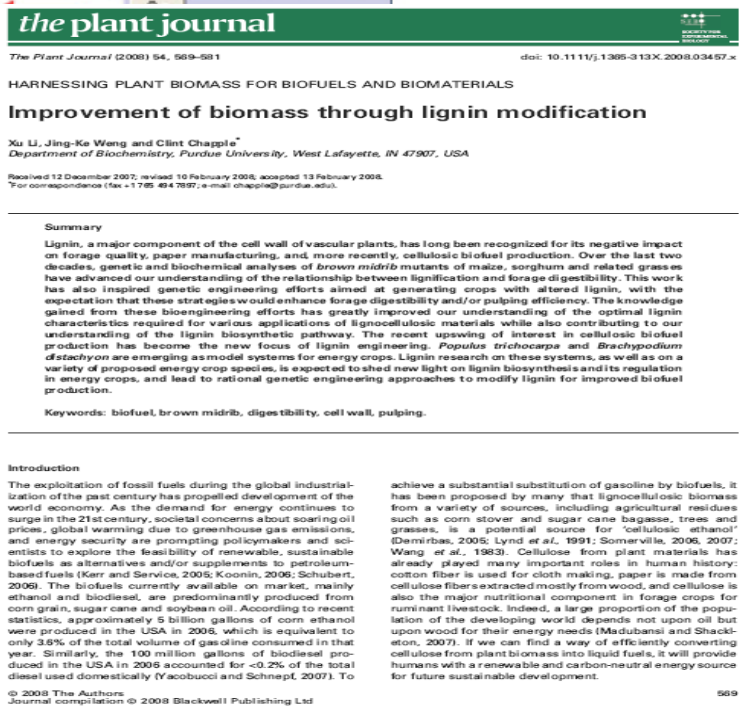
State organizations / biotech companies



Γεωπονικό Πανεπιστήμιο Αθηνών
Agricultural University of Athens

Resources: web

Conduct Electronic Literature Searches



Search database

Query Pubmed

Check article abstract, then full paper if interesting

Resources: Electronic databases

Query database | Research Interest | User Services | Search Website | Home

- Genomics
- Mapping
- Germplasm
- Pathology
- Taxonomy

http://grain.jouy.inra.fr/ggpages/index.shtml

http://gabi.rzpd.de/index.shtml

http://www.tigr.org/tdb/e2k1/tae1/

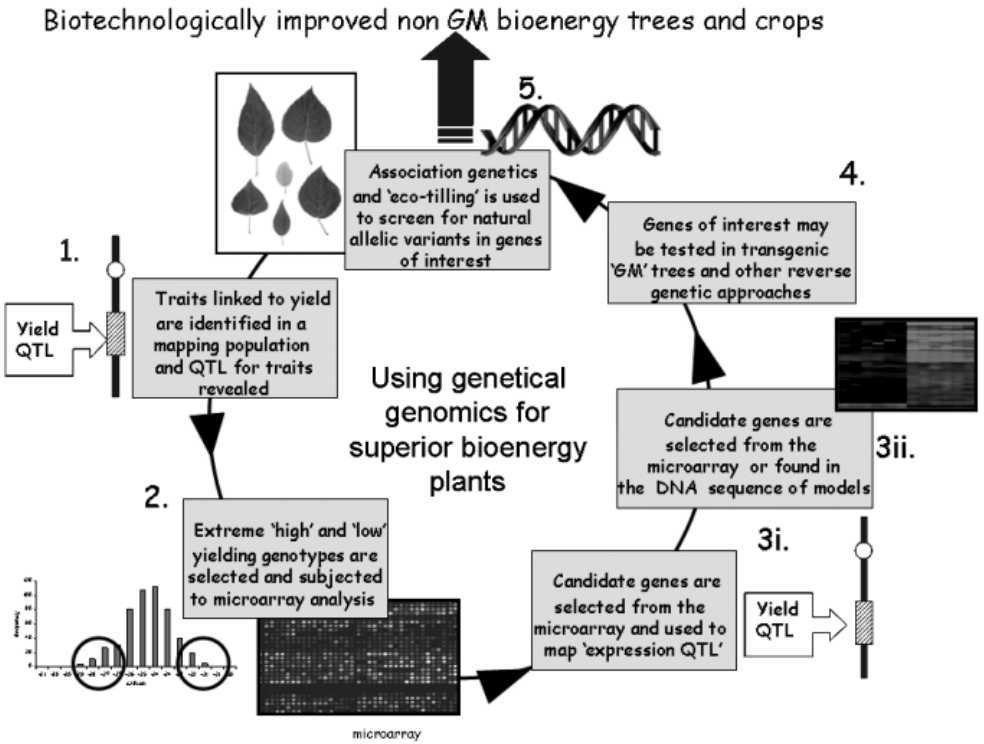
Deliverables

The output of AUA.bio will not be cultivars

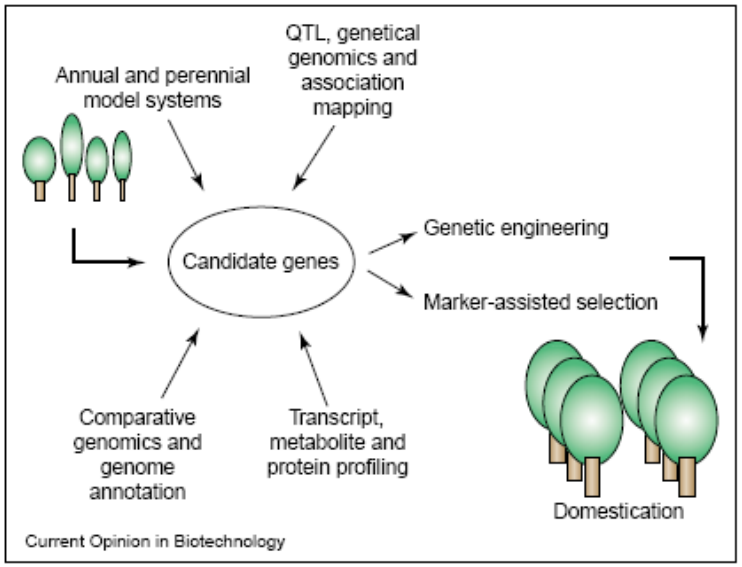
but

to identify resources and tools-markers, plant genotypes and the understanding of the genetic control of relevant traits- that can be exploited in strategies for non-food crop improvement, consistent with 4F Crops objectives.

Crop improvement and Biotechnology



Sims *et al.*, 2006



Boerjan *et al.*, 2005

Crop improvement and Biotechnology

Table 1

Forest tree genomics databases.

Species	Feature	Link
Eucalyptus spp.; *Picea* spp.; *Pinus* spp. *Robinia* spp., *Populus* spp.	EST	http://web.ahc.umn.edu/biodata/
Picea spp.; *Populus* spp.	EST	http://www.arborea.ulaval.ca/en/
Pinus spp.	EST	http://www.pierroton.inra.fr/Lignome/
	EST	http://pinetree.ccgb.umn.edu/
	EST	http://fungen.botany.uga.edu/Projects/Pine/Pine.htm
	EST	http://cbi.labri.fr/outils/SAM/COMPLETE/index.php
	EST	http://www.cbc.umn.edu/ResearchProjects/Pine/DOE.pine/index.html
	Protein database	http://cbi.labri.fr/outils/protic/ProticDB.php
Populus spp.	EST	http://Poppel.fysbot.umu.se
	EST	http://www.populus.db.umu.se
	EST	http://sputnik.btk.fi/project?name=Populus%20euphratica
	EST	http://www.aspendb.mtu.edu/
	EST	http://mycor.nancy.inra.fr/poplardb/index.html
	Microarray analysis	http://www.upscbase.db.umu.se/
	Genome sequence	http://genome.jgi-psf.org/Poptr1/Poptr1.home.html
	SSR resource	http://www.ornl.gov/sci/ipgc/ssr_resource.htm
	Science Plan	http://www.ornl.gov/sci/ipgc/the_populus_genome_science_plan.pdf
All forest tree species	General	http://dendrome.ucdavis.edu/index.html

Boerjan *et al.*, 2005